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Ingo Meirick

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NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER

PATEL, MAHENDRA R

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/571,606	<b>Applicant(s)</b> MEIRICK ET AL.	
	<b>Examiner</b> MAHENDRA PATEL	<b>Art Unit</b> 2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 November 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of the Claims***

This communication is in response to the Amendment filed on 11/18/2009.  
Application No: 10/571,606.

Claims 1-29 are pending.

Claims 1-29 are amended by the applicant.

### **General Note**

The Reference characters enclosed within parentheses (e.g. buffer (120) in Claim 5 is treated as an example characters and no special consideration is given during the examination of the claims.

### **Response to Arguments**

1. An examiner's Response to the record appears below.
2. Applicant's arguments with respect to claims 1-29 have been considered but they are not persuasive and, therefore, the claim rejection is maintained. Please see explanation below, which addresses the arguments.

Applicant argues that (a) "Besset fails to disclose that the base station system compares a size of a data packet segment with a size of a next consecutive data packet segment in the buffer. In the office action, the Examiner refers to column 2, lines 4-12 as allegedly disclosing this feature. This text only teaches that data packets can be segmented. But there is no disclosure of comparing sizes of consecutive data packet segments and identifying a complete data packet based on that comparison". (b) "Moreover, rather than discarding an identified complete data packet from a buffer, Besset teaches discarding data packets before entering the data in the buffer".

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Art Unit: 2617

(a) Besset teaches size of the buffer and comparing packet sizes (see Col 8, lines 51-54, e.g. The size of the CPS packet (in octets) is  $LI+1+3$ , 3 being the size of the header and  $LI+1$  being the size of the CPS packet payload). In the next paragraph, it compares the current size of the packet with previous size of the packet to determine buffer threshold (see Col 8, lines 54-56), e.g. It is then determined whether the buffer 40 is in a state of congestion (step S58). If the buffer is in a state of congestion ( $CONG\_VAL=OK$ )--as determined at a previous sampling--the algorithm passes along branch b1, and the value  $CPS\_CO+LI+1+3$  is compared with the lower threshold (step S60). If  $CPS\_CO+LI+1+3$  is lower than that threshold 44, then it is determined that the initially declared congestion condition is no longer true and the algorithm passes along branch b2 to set the value  $CONG\_VAL=NOK$  (step S62). If  $CPS\_CO+LI+1+3$  is greater than or equal to  $CPS\_Low\_Threshold$ , it is determined that a congestion condition still exists and the algorithm passes along branch b3 to maintain  $CONG\_VAL=OK$ ).

Also the algorithm (see Col 9, lines 27-47), will obviously compare current packet size and previous packet size to determined thresholds if the packet size consisted of only 1 segment size (i.e. smaller size data packet). Therefore Besset teaches the base station system compares a size of a data packet segment with a size of a next consecutive data packet segment in the buffer.

(b) Yuan teaches discarding entire buffer (see Col 1, lines 17-24), A destination station, after receiving all of the cells associated with the packet, reassembles the cells and provides them to the end system or application. If a portion of the packet (i.e., one or more cells) becomes corrupt or dropped during transmission, the entire packet becomes corrupt. The end system or application typically has no use (i.e. discarded entire buffer) for the remaining cells of a corrupt packet. Therefore Yuan teaches discarding an identified complete data packet from a buffer.

The combined method and system of Besset and Yuan obviously teach an identified complete data packet is discarded from a buffer that contains the segments of the data packet. Therefore, Claim 1 rejection is maintained.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Besset et al. (US 6711126 B1), in view of Yuan et al. (US 6567378 B1).

**Regarding claim 1**, Besset teaches a method of managing a data buffer comprising a queue of consecutive data packets in a base station system of a mobile communications system

Art Unit: 2617

([Col 7, lines 12-14] (e.g. FIG. 4 shows the queuing of CPS packets at the buffer entrance for the case of example, waiting to be multiplexed to form CPS PDUs);

comprising the steps of: said base station system comparing a size of a data packet segment with a size of a next consecutive data packet segment in said buffer ([Col 2, lines 4-12] (e.g. an ATM adaptation layer comprises a number of sub-layers: a service specific segmentation (i.e. comparing a size of a data packet segment with a size of a next consecutive data packet segment in a buffer ) and reassembly sub layer (SSSAR) forming part of SEG-SSCS which allows data packets exceeding 45 octets (i.e. size) to be segmented));

Said base station system identifying a complete data packet in said buffer based on said comparison ([Col 10, lines 36-42] (e.g. the algorithm (i.e. based on ID comparison) starts by reading the UUI field of a CPS packet being processed (i.e. identifying a data packet). As explained above, this UUI field has the value 27 if at least one other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary, the CPS packet is the last one of the frame. Note that a packet can be both the first and last packet of a frame, as in the case of packet 5 in FIG. 2 (i.e. next data packet segment as a first data packet segment)));

And said base station system discarding said identified complete data from the said buffer ([Col 11, lines 23-35] (e.g. If the buffer is saturated, the algorithm follows branch which leads to the step of discarding the current CPS packet and setting the parameter PD.sub.AAL2 =TRUE. Consequently, the algorithm for all the following CPS packets up to but excluding the next first packet will then evolve described above to step and thereafter follow branch, whereupon these packets shall be systematically discarded. Thus in the event of a buffer overflow as determined by the decision algorithm for overflow management the current CPS packet and all the following

CPS packets of an AAL2 SDU are systematically discarded even if one or several initial packet(s) had been recorded in the buffer memory));

Besset differ from the claimed invention in not specifically teaching segments of data packets in a protocol.

However, the preceding limitation is known in the art of communications. In the same field of endeavor, Yuan teaches a method for segmenting data packets ([Col 1, lines 10-17] (e.g. Cell relay systems, such as asynchronous transfer mode (ATM) systems, transmit data over a network as a plurality of fixed-length cells. The individual transmissions typically include one or more cells that constitute a portion of variable-length packets used by end systems or applications. Before transmission, a source station segments a packet into one or more cells and then transmits the cells (i.e. A complete data packet is build and transmitted).

Yuan also teaches segments discarding process ([Col 3, lines 55-65] (e.g. FIGS. 5A and 5B are flowcharts of cell discard processing consistent with the present invention. The processing begins when an output port receives a cell of an incoming packet over a virtual circuit at queuing buffer. Each packet has an identifier such as a Virtual Circuit Identifier (VCI), for example, to identify the virtual circuit over which it is carried. Controller processes the incoming cell to determine whether it is the first cell of the packet. Controller might make this determination from information provided in the header (FIG. 3B) of the ATM cell, or from information contained within payload)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invitation to implement the method of Yuan within the method of Besset to provide enhanced

buffer management in the protocol communication technique in a radio communication network.  
The new method improves networking performance with discarding redundant data packets.

**Regarding claim 2**, Besset in view of Yuan teaches all the limitations of claim 1.

Besset further teaches the method wherein said identifying step comprises the steps of:  
identifying said next data packet segment as a first data packet segment of said complete data packet in said buffer if said size of said data packet segment is smaller than said size of said next data packet segment ([Col 10, lines 36-42] (e.g. The algorithm (i.e. User defined rules for data packet based on ID comparison) starts by reading the UUI field of a CPS packet being processed. As explained above, this UUI field has the value 27 if at least one other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary, the CPS packet is the last one of the frame. Note that a packet can be both the first and last packet of a frame, as in the case of packet 5 in FIG. 2 (i.e. next data packet segment as a first data packet segment)));

and associating said identified first data packet segment with a first segment identifier ([Col 3, lines 12-15] (e.g. In the case of only one CPS PDU, there is also a CPS-PDU start field (STF) octet which serves to identify the position of the first CPS packet inside the payload (I.e. identified first data packet) of the ATM cell or CPS PDU)).

**Regarding claim 3**, Besset in view of Yuan teaches all the limitations of claim 1.

Besset further teaches the method wherein said identifying step comprises the steps of:  
identifying said next data packet segment as a last data packet segment of said complete data packet in said buffer if said size of said data packet segment differs from said size of said next data packet segment ([Col 3, lines 65-67, Col 4, lines 1-2] (e.g. The thus-multiplexed CPS PDUs are then transferred to the ATM layer via the ATM service access point (SAP), The ATM layer



Art Unit: 2617

comprises ATM cells which are each composed of a 5 octet header (i.e. header is use for identifying beginning of a data packet (or next data packet segment) and a 48 octet payload. A CPS PDU can thus be integrally contained in the payload of an ATM cell));

And associating said identified last data packet segment with a last segment identifier ([Col 2, lines 62-68] (e.g. a value equal "26" indicates the reception of the last data of an SSSAR SDU (i.e. identified last data packet). Any other value, i.e. between 0 and 26 should not be used for reasons of compatibility with other SSCS specifications)).

**Regarding claim 4,** Besset in view of Yuan teaches all the limitations of clam 2.

Besset further teaches the method wherein said discarding step comprises the step of discarding said data packet segment associated with said first segment identifier, said data packet segment associated with said last segment identifier and any intermediate data packet segments between said data packet segment associated with said first segment identifier and said data packet segment associated with said last segment identifier in said buffer ([Col 11, lines 23-35] (e.g. If the buffer is saturated, the algorithm (i.e. user defined rules to discard the FIRST, LAST or intermediate data from the buffer) follows branch which leads to the step of discarding the current CPS packet and setting the parameter PD.sub.AAL2 =TRUE. Consequently, the algorithm for all the following CPS packets up to but excluding the next first packet will then evolve described above to step and thereafter follow branch, whereupon these packets shall be systematically discarded. Thus in the event of a buffer overflow as determined by the decision algorithm for overflow management the current CPS packet and all the following CPS packets of an AAL2 SDU are systematically discarded even if one or several initial packet(s) had been recorded in the buffer memory)).

**Regarding claim 5**, Besset teaches a system for managing a data buffer including a queue of consecutive data packets in a base station system of a mobile communications system electronic circuitry configured to ([Col 7, lines 12-14] (e.g. FIG. 4 shows the queuing of CPS packets at the buffer entrance for the case of example 2, waiting to be multiplexed to form CPS PDUs);

Compare a size of a data packet with a size of a next consecutive data packet in said buffer ([Col 2, lines 4-12] (e.g. an ATM adaptation layer comprises a number of sub-layers: a service specific segmentation (i.e. a size of a data packet segment with a size of a next consecutive data packet segment in a buffer) and reassembly sub layer (SSSAR) forming part of SEG-SSCS which allows data packets exceeding 45 octets (i.e. size) to be segmented));

Identify a complete data packet based on said comparison ([Col 10, lines 36-42] (e.g. the algorithm (i.e. based on ID comparison) starts by reading the UUI field of a CPS packet being processed. As explained above, this UUI field has the value 27 if at least one other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary, the CPS packet is the last one of the frame. Note that a packet can be both the first and last packet of a frame, as in the case of packet 5 in FIG. 2 (i.e. next data packet segment as a first data packet segment)));

And discard said identified complete data packet from said buffer ([Col 11, lines 23-35] (e.g. If the buffer is saturated, the algorithm follows branch which leads to the step of discarding the current CPS packet and setting the parameter PD.sub.AAL2 =TRUE. Consequently, the algorithm for all the following CPS packets up to but excluding the next first packet will then evolve described above to step and thereafter follow branch, whereupon these packets shall be systematically discarded. Thus in the event of a buffer overflow as determined by the decision

Art Unit: 2617

algorithm for overflow management the current CPS packet and all the following CPS packets of an AAL2 SDU are systematically discarded even if one or several initial packet(s) had been recorded in the buffer memory));

Besset differ from the claimed invention in not specifically teaching segments of data packets in a protocol.

However, the preceding limitation is known in the art of communications. In the same field of endeavor, Yuan teaches a method for segmenting data packets ([Col 1, lines 10-17] (e.g. Cell relay systems, such as asynchronous transfer mode (ATM) systems, transmit data over a network as a plurality of fixed-length cells. The individual transmissions typically include one or more cells that constitute a portion of variable-length packets used by end systems or applications. Before transmission, a source station segments a packet into one or more cells and then transmits the cells (i.e. A complete data packet is build and transmitted).

Yuan also teaches segments discarding process ([Col 3, lines 55-65] (e.g. FIGS. 5A and 5B are flowcharts of cell discard processing consistent with the present invention. The processing begins when an output port receives a cell of an incoming packet over a virtual circuit at queuing buffer. Each packet has an identifier such as a Virtual Circuit Identifier (VCI), for example, to identify the virtual circuit over which it is carried. Controller processes the incoming cell to determine whether it is the first cell of the packet. Controller might make this determination from information provided in the header (FIG. 3B) of the ATM cell, or from information contained within payload)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invitation to implement the method of Yuan within the method of Besset to provide enhanced

Art Unit: 2617

buffer management in the protocol communication technique in a radio communication network.

The new method improves networking performance with discarding redundant data packets.

**Regarding claim 6**, Besset in view of Yuan teaches all the limitations of claim 5.

Besset further teaches the system wherein said electronic circuitry is configured to identify said next data packet segment as a first data packet of said complete data packet in said buffer if said size of said data packet segment is smaller than said size of said next data packet segment, said system further comprises means for associating said identified first data packet segment with a first segment identifier ([Col 10, lines 36-42]) (e.g. The algorithm (i.e. User defined rules for data packet segments based on ID comparison) starts by reading the UUI field of a CPS packet being processed. As explained above, this UUI field has the value 27 if at least one other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary, the CPS packet is the last one of the frame. Note that a packet can be both the first and last packet of a frame, as in the case of packet 5 in FIG. 2. (I.e. next data packet segment as a first data packet segment));

Said system further comprises means for associating said identified first data packet segment with a first segment identifier ([Col 3, lines 12-15]) (e.g. In the case of only one CPS PDU, there is also a CPS-PDU start field (STF) octet which serves to identify the position of the first CPS packet inside the payload (I.e. identified first data packet) of the ATM cell or CPS PDU)).

**Regarding claim 7**, Besset in view of Yuan teaches all the limitations of claim 5.

Besset further teaches the system wherein said electronic circuitry configured to identify said next data packet segment as a last data packet segment of said complete data packet in said

Art Unit: 2617

buffer if said size of said data packet segment differs from said size of said next data packet segment, ([Col 10, lines 36-42) (e.g. The algorithm (i.e. User defined rules for data packet segments based on ID comparison) starts by reading the UUI field of a CPS packet being processed. As explained above, this UUI field has the value 27 if at least one other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary, the CPS packet is the last one of the frame. Note that a packet can be both the first and last packet of a frame, as in the case of packet 5 in FIG. 2 (i.e. next data packet segment as a first data packet segment))));

said system further comprises means for associating said identified last data packet segment with a last segment identifier ([Col 2, lines 62-68] (e.g. A value equal "26" indicates the reception of the last data of an SSSAR SDU (i.e. identified last data packet). Any other value, i.e. between 0 and 26 should not be used for reasons of compatibility with other SSCS specifications)).

**Regarding claim 8,** Besset in view of Yuan teaches all the limitations of claim 6.

Besset further teaches the system wherein said electronic circuitry is configured to discard said data packet segment associated with said first segment identifier, said data packet segment associated with said last segment identifier and any intermediate data packet segments between said data packet segment associated with said first segment identifier and said data packet segment associated with said last segment identifier in said buffer ([Col 4, lines 34-43] (e.g., the present invention proposes a method of managing data packets originating from data frames (i.e. packet segment (FIRST) , the packets being presented to buffer means prior to processing, wherein, when a packet corresponding to the start of a frame (i.e. FIRST) is presented to the buffer stage, it is determined whether the filling level of the buffer means exceeds a first

Art Unit: 2617

predetermined filling threshold corresponding to a state of congestion and, if such is the case, this packet and all packets belonging to that same frame are systematically discarded (i.e. discarding step comprises the step of discarding data based on industry known techniques such as FIFO)).

**Regarding claim 9**, Besset in view of Yuan teaches all the limitations of claim 5. Besset further teaches a base station network node of a base station system in a mobile communications system comprising: a data buffer comprising a queue of consecutive segments of data packets; ([Col 1, lines 5-11] (e.g. The present invention relates to the field of data transfer in the form of asynchronous packets in radio or cable communication networks (I.e. network with base stations). When packets are transferred asynchronously, there is a risk of congestion at the network nodes if the instantaneous flow rate of incoming packets exceeds the maximum throughput capacity of the multiplex));

and a system for managing said data buffer ([Col 1, lines 12-15] (e.g. In this context, the invention concerns more specifically--but not exclusively--a protocol for managing such congestions in buffers which multiplex network connections known as AAL2 (ATM (asynchronous transfer mode) adaptation layer 2) connections));

**Regarding claim 10**, Besset teaches a method of enabling identification of a complete data packet in a data buffer comprising a queue of consecutive data packet, comprising the steps of: comparing a size of a data packet with a size of a next consecutive data packet in said buffer ([Col 7, lines 12-14] (e.g. FIG. 4 shows the queuing of CPS packets at the buffer entrance for the case of example, waiting to be multiplexed to form CPS PDUs);

comprising the steps of: said base station system comparing a size of a data packet segment with a size of a next consecutive data packet segment in said buffer ([Col 2, lines 4-12] (e.g. an ATM adaptation layer comprises a number of sub-layers: a service specific segmentation (i.e. comparing a size of a data packet segment with a size of a next consecutive data packet segment in a buffer ) and reassembly sub layer (SSSAR) forming part of SEG-SSCS which allows data packets exceeding 45 octets (i.e. size) to be segmented));

And identifying a complete data packet in said buffer based on said comparison ([Col 10, lines 36-42] (e.g. the algorithm (i.e. based on ID comparison) starts by reading the UUI field of a CPS packet being processed (i.e. identifying a data packet). As explained above, this UUI field has the value 27 if at least one other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary, the CPS packet is the last one of the frame. Note that a packet can be both the first and last packet of a frame, as in the case of packet 5 in FIG. 2 (i.e. next data packet segment as a first data packet segment))).

Besset differ from the claimed invention in not specifically teaching segments of data packets in a protocol.

However, the preceding limitation is known in the art of communications. In the same field of endeavor, Yuan teaches a method for segmenting data packets ([Col 1, lines 10-17] (e.g. Cell relay systems, such as asynchronous transfer mode (ATM) systems, transmit data over a network as a plurality of fixed-length cells. The individual transmissions typically include one or more cells that constitute a portion of variable-length packets used by end systems or applications. Before transmission, a source station segments a packet into one or more cells and then transmits the cells (i.e. A complete data packet is build and transmitted).

Yuan also teaches segments discarding process ([Col 3, lines 55-65] (e.g. FIGS. 5A and 5B are flowcharts of cell discard processing consistent with the present invention. The processing begins when an output port receives a cell of an incoming packet over a virtual circuit at queuing buffer. Each packet has an identifier such as a Virtual Circuit Identifier (VCI), for example, to identify the virtual circuit over which it is carried. Controller processes the incoming cell to determine whether it is the first cell of the packet. Controller might make this determination from information provided in the header (FIG. 3B) of the ATM cell, or from information contained within payload)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invitation to implement the method of Yuan within the method of Besset to provide enhanced buffer management in the protocol communication technique in a radio communication network. The new method improves networking performance with discarding redundant data packets.

**Regarding claim 11**, Besset in view of Yuan teaches all the limitations of claim 10. Besset further teaches the method further comprising the step of providing a segment counter associated with a data packet segment in said buffer ([Col 6, lines 28-41] (e.g. In order to manage the possible congestion and overflow conditions of the buffer efficiently, the method advantageously operates so that: for each incoming CPS packet, the Length Indicator field (LI) of the CPS Packet header is read to determine the length of the arriving CPS Packet; the thus determined length of the arriving CPS packet is used to update a buffer occupancy counter (i.e. counter associated with a data packet) which is configured to store at least one amongst: i) the instantaneous number of octets used in the buffer for a given AAL2 connection; ii) the instantaneous number of octets used in the buffer for a given group of AAL2 connections; iii) the



Art Unit: 2617

instantaneous number of octets used in the buffer by all AAL2 connections stored therein.)).

**Regarding claim 12**, Besset in view of Yuan teaches all the limitations of claim 11.

Besset further teaches the method further comprising the steps of:

comparing a size of said data packet segment associated with said counter with a size of a next

consecutive data packet segment in said buffer ([Col 10, lines 36-42] (e.g. The algorithm (i.e.

User defined rules for data packet based on ID comparison) starts by reading the UUI field of a

CPS packet being processed. As explained above, this UUI field has the value 27 if at least one

other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary,

the CPS packet is the last one of the frame. Note that a packet can be both the first and last

packet of a frame, as in the case of packet 5 in FIG. 2 (i.e. next data packet segment as a first

data packet segment));

identifying said next data packet segment as a first data packet segment of said complete data packet in said buffer if said size of said data packet segment associated with said counter is smaller than said size of said next data packet segment ([Col 2, lines 34-40] (e.g. the SSSAR will segment (and reassemble) the SSSAR SDUs (in the present case 1 AAL2 SDU=1 SSSAR SDU) into packets referred to as SSSAR protocol data units PDUs whose maximum size by default is 45 octets (i.e. data segment size). Consequently, the 150-octet (e.g. packet size) AAL2 SDU of the example can be divided up into three 45-octet SSSAR PDUs (e.g. First data packet segment, second data packet segment, Next data packet segment, etc) and the 15 remaining octets (i.e. compare and identify smaller size packets)) ) can be loaded into a fourth SSSAR PDU)).

**Regarding claim 13**, Besset in view of Yuan teaches all the limitations of claim 12.

Besset further teaches the method further comprising the steps of:

(a) comparing a size of the data packet segment currently associated with said counter with a size of a next consecutive data packet segment in said buffer ([Col 6, lines 28-41] (e.g. In order to manage the possible congestion and overflow conditions of the buffer efficiently, the method advantageously operates so that: for each incoming CPS packet, the Length Indicator field (LI) of the CPS Packet header is read to determine the length of the arriving CPS Packet (e.g. comparing a size of the data packet segment));

and (b) associating said counter with said next data packet segment if said size of the data packet segment currently associated with said counter is equal to or larger than said size of said next data packet segment ([Col 6, lines 28-41] (e.g. the thus determined length of the arriving CPS packet is used to update a buffer occupancy counter (i.e. segment counter associated with a data packet segment) which is configured to store at least one amongst));

and repeating both said comparison step (a) and said associating step (b) until said size of the data packet currently associated with said counter is smaller than said size of said next data packet segment, whereby said next data packet segment is identified as a first data packet segment of said complete data packet in said buffer ([Col 2, lines 34-40] (e.g. the SSSAR will segment (and reassemble) the SSSAR SDUs (in the present case 1 AAL2 SDU=1 SSSAR SDU) into packets referred to as SSSAR protocol data units PDUs whose maximum size by default is 45 octets (i.e. size of a buffer). Consequently, the 150-octet (e.g. buffer size) AAL2 SDU of the example can be divided up into three 45-octet SSSAR PDUs (e.g. First data packet segment, second data packet segment, Next data packet segment, etc) and the 15 remaining octets (i.e. compare and identify smaller size packets)) ) can be loaded into a fourth SSSAR PDU)).

**Regarding claim 14,** Besset in view of Yuan teaches all the limitations of claim 12.

Art Unit: 2617

Besset further teaches the method further comprising the step of associating said segment counter with said first data packet segment of said complete data packet ([Col 6, lines 28-41] (e.g. In order to manage the possible congestion and overflow conditions of the buffer efficiently, the method advantageously operates so that: for each incoming CPS packet (i.e. associating first incoming segment to segment counter with said first data packet segment (FIRST), the Length Indicator field (LI) of the CPS Packet header is read to determine the length of the arriving CPS Packet; thus determined length of the arriving CPS packet is used to update a buffer occupancy counter (i.e. segment counter associated with a data packet segment ))).

**Regarding claim 15,** Besset in view of Yuan teaches all the limitations of claim 14.

Besset further teaches the method further comprising the steps of:

comparing a size of said data packet segment associated with said counter with a size of a next consecutive data packet segment in said buffer ([Col 2, lines 34-40] (e.g. the SSSAR will segment (and reassemble) the SSSAR SDUs (in the present case 1 AAL2 SDU=1 SSSAR SDU) into packets referred to as SSSAR protocol data units PDUs whose maximum size by default is 45 octets (i.e. data segment size). Consequently, the 150-octet (e.g. packet size) AAL2 SDU of the example can be divided up into three 45-octet SSSAR PDUs (e.g. First data packet segment, second data packet segment, LAST data packet segment, etc) and the 15 remaining octets (i.e. compare and identify smaller size packets)) ) can be loaded into a fourth SSSAR PDU)).

and identifying said next data packet segment as a last data packet segment of said complete data packet in said buffer if said size of said data packet segment associated with said counter differs from said size of said next data packet segment ([Col 2, lines 62-68] (e.g. A value equal "26" indicates the reception of the last data of an SSSAR SDU (i.e. identified last data

Art Unit: 2617

packet). Any other value, i.e. between 0 and 26 should not be used for reasons of compatibility with other SSCS specifications)).

**Regarding claim 16**, Besset in view of Yuan teaches all the limitations of claim 15.

Besset further teaches the method wherein said complete data packet is identified as comprising said first data packet segment of said complete data packet, said last data packet segment of said complete data packet and any intermediate data packet segments between said first and last data packet segment of said complete data packet in said buffer ([Col 2, lines 34-40] (e.g. the SSSAR will segment (and reassemble) the SSSAR SDUs (in the present case 1 AAL2 SDU=1 SSSAR SDU) into packets referred to as SSSAR protocol data units PDUs whose maximum size by default is 45 octets (i.e. Segment size ). Consequently, the 150-octet (e.g. Data Packet size ) AAL2 SDU of the example can be divided up into three 45-octet SSSAR PDUs (e.g. First data packet segment, intermediate data packet segment, LAST data packet segment, etc) )).

**Regarding claim 17**, Besset in view of Yuan teaches all the limitations of claim 15.

Besset further teaches the method further comprising the steps of: determining a total size of said first data packet segment of said complete data packet, said last data packet segment of said complete data packet and any intermediate data packet segments between said first and last data packet segment of said complete data packet in said buffer ; comparing said total size with a minimum size threshold; and identifying said complete data packet as comprising said first data packet segment of said complete data packet, said last data packet segment of said complete data packet and any intermediate data packet segments between said first and last data packet segment of said complete data packet in said buffer if said total size is larger than said minimum size threshold ([Col 8, lines 32-44] (e.g. This is the counter which indicates (i.e. associating

Art Unit: 2617

with segment) the buffer's current filling level (for an AAL2 connection, a group of AAL2 connections or the entire buffer). In other words it indicates the number of octets (i.e. .segments) present in the buffer for a given AAL2 connection (or for a given group of connections, or the total number of octets used (i.e. determining a total size of first (or last) data packet or segment))).

said system further comprises means for associating said identified last data packet segment with a last segment identifier buffer ([Col 2, lines 62-68] (e.g. A value equal "26" indicates the reception of the last data of an SSSAR SDU (i.e. identified last data packet). Any other value, i.e. between 0 and 26 should not be used for reasons of compatibility with other SSCS specifications)).

**Regarding claim 18,** Besset in view of Yuan teaches all the limitations of claim 11.

Besset further teaches the method further comprising the steps of:

comparing a size of said data packet segment associated with said counter with a size of a next consecutive data packet segment in said buffer ([Col 8, lines 55-65] (e.g. It is then determined whether the buffer 40 is in a state of congestion (step S58). If the buffer is in a state of congestion (CONG\_VAL=OK)--as determined at a previous sampling--the algorithm passes along branch b1, and the value  $CPS\_CO + LI + 1 + 3$  is compared with the lower threshold (step S60). If  $CPS\_CO + LI + 1 + 3$  is lower than that threshold 44, then it is determined that the initially declared congestion condition is no longer true and the algorithm passes along branch b2 to set the value CONG\_VAL=NOK (i.e. comparing a size of said data packet segment ). If  $CPS\_CO + LI + 1 + 3$  is greater than or equal to CPS\_Low\_Threshold, it is determined that a

Art Unit: 2617

congestion condition still exists and the algorithm passes along branch b3 to maintain  
CONG\_VAL=OK));

and identifying said next data packet segment as a last data packet segment of said complete data packet in said buffer if said size of said data packet segment associated with said counter differs from said size of said next data packet segment ([Col 10, lines 36-42) (e.g. The algorithm (i.e. User defined rules for data packet segments based on ID comparison) starts by reading the UUI field of a CPS packet being processed. As explained above, this UUI field has the value 27 if at least one other CPS packet follows to complete the AAL2 SDU frame, and the value 26 if, on the contrary, the CPS packet is the last one of the frame. Note that a packet can be both the first and last packet of a frame, as in the case of packet 5 in FIG. 2 (i.e. next data packet segment as a first data packet segment)));

**Regarding claim 19**, Besset in view of Yuan teaches all the limitations of claim 11.

Besset further teaches the method further comprising the steps of:

(c) comparing a size of the data packet segment currently associated with said counter with a size of a next consecutive data packet segment in said ([Col 8, lines 55-65] (e.g. It is then determined whether the buffer 40 is in a state of congestion (step S58). If the buffer is in a state of congestion (CONG\_VAL=OK)--as determined at a previous sampling--the algorithm passes along branch b1, and the value  $CPS\_CO+LI+1+3$  is compared with the lower threshold (step S60). If  $CPS\_CO+LI+1+3$  is lower than that threshold 44, then it is determined that the initially declared congestion condition is no longer true and the algorithm passes along branch b2 to set the value CONG\_VAL=NOK (i.e. comparing a size of said data packet segment ). If  $CPS\_CO+LI+1+3$  is greater than or equal to CPS\_Low\_Threshold, it is determined that a

Art Unit: 2617

congestion condition still exists and the algorithm passes along branch b3 to maintain  
CONG\_VAL=OK));

(d) associating said counter with said next data packet segment if said size of the data packet segment currently associated with said counter is equal to said size of said next data packet segment ; and repeating both said comparison step (c) and said associating step (d) until said size of the data packet segment currently associated with said differs from said size of said next data packet segment, whereby said next data packet segment is identified as a last data packet segment of said complete data packet in said buffer ([Col 6, lines 28-41] (e.g. In order to manage the possible congestion and overflow conditions of the buffer efficiently, the method advantageously operates so that: for each incoming CPS packet, the Length Indicator field (LI) of the CPS Packet header is read to determine the length of the arriving CPS Packet; the thus determined length of the arriving CPS packet is used to update a buffer occupancy counter (i.e. counter associated with a data packet) which is configured to store at least one amongst: i) the instantaneous number of octets used in the buffer for a given AAL2 connection; ii) the instantaneous number of octets used in the buffer for a given group of AAL2 connections; iii) the instantaneous number of octets used in the buffer by all AAL2 connections stored therein.)).

**Regarding claim 20**, Besset teaches a system for enabling identification of a complete data packet in a data buffer comprising a queue of consecutive data packet ([Col 7, lines 12-14] (e.g. FIG. 4 shows the queuing of CPS packets at the buffer entrance for the case of example 2, waiting to be multiplexed to form CPS PDUs),

comprising: means for comparing a size of a data packet segment with a size of a next consecutive data packet segment in said buffer and means for identifying said complete data packet based on said comparison ([Col 8, lines 55-65] (e.g. It is then determined whether the buffer 40 is in a state of congestion (step S58). If the buffer is in a state of congestion (CONG\_VAL=OK)--as determined at a previous sampling--the algorithm passes along branch b1, and the value  $CPS\_CO+LI+1+3$  is compared with the lower threshold (step S60). If  $CPS\_CO+LI+1+3$  is lower than that threshold 44, then it is determined that the initially declared congestion condition is no longer true and the algorithm passes along branch b2 to set the value CONG\_VAL=NOK (i.e. comparing a size of said data packet segment ). If  $CPS\_CO+LI+1+3$  is greater than or equal to CPS\_Low\_Threshold, it is determined that a congestion condition still exists and the algorithm passes along branch b3 to maintain CONG\_VAL=OK));

Besset differ from the claimed invention in not specifically teaching segments of data packets in a protocol.

However, the preceding limitation is known in the art of communications. In the same field of endeavor, Yuan teaches a method for segmenting data packets ([Col 1, lines 10-17] (e.g. Cell relay systems, such as asynchronous transfer mode (ATM) systems, transmit data over a network as a plurality of fixed-length cells. The individual transmissions typically include one or more cells that constitute a portion of variable-length packets used by end systems or applications. Before transmission, a source station segments a packet into one or more cells and then transmits the cells (i.e. A complete data packet is build and transmitted).

Yuan also teaches segments discarding process ([Col 3, lines 55-65] (e.g. FIGS. 5A and 5B are flowcharts of cell discard processing consistent with the present invention. The



Art Unit: 2617

processing begins when an output port receives a cell of an incoming packet over a virtual circuit at queuing buffer. Each packet has an identifier such as a Virtual Circuit Identifier (VCI), for example, to identify the virtual circuit over which it is carried. Controller processes the incoming cell to determine whether it is the first cell of the packet. Controller might make this determination from information provided in the header (FIG. 3B) of the ATM cell, or from information contained within payload)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the method of Yuan within the method of Besset to provide enhanced buffer management in the protocol communication technique in a radio communication network. The new method improves networking performance with discarding redundant data packets.

**Regarding claim 21,** Besset in view of Yuan teaches all the limitations of claim 20.

Yuan further teaches the system comprising means for associating a segment counter with a data packet segment in said buffer ([Col 4, lines 26-39] (e.g. Controller determines the number of cells yet to be received from the total length of the packet. To accomplish this determination, controller contains a mechanism to determine the number of remaining cells that have yet to arrive at buffer. For example, the cell may carry a decrementing counter field that explicitly conveys the number of remaining cells. To implement this feature, the system may use the header CRC field 326 (FIG. 3B), for example, as a counter to convey the length of the packet in terms of cells. This limits the length of the packet, however, to 256 cells or 12,288 bytes.

Alternatively, controller might contain a counter that decrements when a cell belonging to the same packet and identified with the same VCI has been stored in buffer (i.e. a system comprising a segment counter with a data packet segment)).

**Regarding claim 22**, Besset in view of Yuan teaches all the limitations of claim 21.

Yuan further teaches the system wherein said comparison means is adapted for comparing a size of said data packet segment associated with said counter with a size of a next consecutive data packet segment in said buffer, wherein said identifying means is adapted for identifying said next data packet segment as a first data packet segment of said complete data packet in said buffer if said size of said data packet segment associated with said counter is smaller than said size of said next data packet segment ([Col 4, lines 26-39] (e.g. Controller determines the number of cells yet to be received from the total length of the packet. To accomplish this determination, controller contains a mechanism to determine the number of remaining cells that have yet to arrive at buffer. For example, the cell may carry a decrementing counter field that explicitly conveys the number of remaining cells. To implement this feature, the system may use the header CRC field 326 (FIG. 3B), for example, as a counter to convey the length of the packet in terms of cells. This limits the length of the packet, however, to 256 cells or 12,288 bytes. Alternatively, controller might contain a counter that decrements when a cell belonging to the same packet and identified with the same VCI has been stored in buffer (i.e. a system comparing a size of said data packet segment associated with counter with a size of a next consecutive data packet segment in a buffer)).

**Regarding claim 23**, Besset in view of Yuan teaches all the limitations of claim 21.

Besset further teaches the system wherein said comparison means is adapted for comparing a size of the data packet segment currently associated with said counter with a size of a next consecutive data packet segment in said buffer, wherein said associating means is adapted for associating said counter with said next data packet segment if said size of the data packet

Art Unit: 2617

segment currently associated with said counter is equal to or larger than said size of said next data packet segment, said comparison means is adapted for repeating said size comparison and said associating means is adapted for repeating said counter association until said size of the data packet segment currently associated with said counter is smaller than said size of said next data packet segment whereby said identifying means is adapted for identifying said next data packet segment as a first data packet segment of said complete data packet in said buffer ([Col 4, lines 26-39] (e.g. Controller determines the number of cells yet to be received from the total length of the packet. To accomplish this determination, controller contains a mechanism to determine the number of remaining cells that have yet to arrive at buffer. For example, the cell may carry a decrementing counter field that explicitly conveys the number of remaining cells. To implement this feature, the system may use the header CRC field 326 (FIG. 3B), for example, as a counter to convey the length of the packet in terms of cells. This limits the length of the packet, however, to 256 cells or 12,288 bytes. Alternatively, controller might contain a counter that decrements when a cell belonging to the same packet and identified with the same VCI has been stored in buffer (i.e. a system comparing a size of said data packet segment associated with counter with a size of a next consecutive data packet segment in a buffer)).

**Regarding claim 24,** Besset in view of Yuan teaches all the limitations of claim 22.

Besset further teaches the system wherein said associating means is adapted for associating said segment counter with said first data packet segment (FIRST)) of said complete data packet ([Col 8, lines 32-44] (e.g. This is the counter which indicates (i.e. associating with segment) the buffer's current filling level (for an AAL2 connection, a group of AAL2 connections or the entire buffer). In other words it indicates the number of octets (i.e. .segments) present in the buffer for a

Art Unit: 2617

given AAL2 connection (or for a given group of connections, or the total number of octets used))).

**Regarding claim 25**, Besset in view of Yuan teaches all the limitations of claim 24.

Besset further teaches the system wherein said comparison means is adapted for comparing a size of said data packet segment associated with said counter with a size of a next consecutive data packet segment in said buffer, wherein said identifying means is adapted for identifying said next data packet segment as a last data packet segment of said complete data packet in said buffer if said size of said data packet segment associated with said counter differs from said size of said next data packet segment ([Col 8, lines 55-65] (e.g. It is then determined whether the buffer is in a state of congestion. If the buffer is in a state of congestion (CONG\_VAL=OK), as determined at a previous sampling, the algorithm passes along branch b1, and the value CPS\_CO+LI+1+3 (i.e. size) is compared with the lower threshold (i.e. comparing a size of segments or packets). If CPS\_CO+LI+1+3 (i.e. size) is lower than that threshold, then it is determined that the initially declared congestion condition is no longer true and the algorithm passes along branch b2 to set the value CONG\_VAL=NOK. If CPS\_CO+LI+1+3 (i.e. size) is greater than or equal to CPS\_Low\_Threshold, it is determined that a congestion condition still exists and the algorithm passes along branch b3 to maintain CONG\_VAL=OK)).

**Regarding claim 26**, Besset in view of Yuan teaches all the limitations of claim 25.

Besset further teaches the system wherein said identifying means is adapted for identifying said complete data packet as comprising said first data packet segment of said complete data packet, said last data packet segment of said complete data packet and any intermediate data packet segments between said first and last data packet segment of said

Art Unit: 2617

complete data packet in said buffer (Col 4, lines 3-11] (e.g. In practice, CPS packets are stored in buffers before being transposed into corresponding ATM cells via the intermediate (i.e. data packets) multiplexing into CPS PDUs. Indeed, the information arrives at the buffers asynchronously and some non-negligible processing time is required to transform the CPS packets into CPS PDUs. It is thus possible to receive at a given moment more information in the form of CPS packets than can be transferred on the interface. This is the reason why the packets must be buffered)).

**Regarding claim 27**, Besset in view of Yuan teaches all the limitations of claim 25.

Besset further teaches the system further comprising means for determining a total size of said first data packet segment of said complete data packet, said last data packet segment) of said complete data packet and any intermediate data packet segments between said first and last data packet segment of said complete data packet in said buffer, said comparison means is adapted for comparing said total size with a minimum size threshold, and said identifying means is adapted for identifying said complete data packet as comprising said first data packet segment (FIRST) of said complete data packet, said last data packet segment of said complete data packet and any intermediate data packet segments between said first and last data packet segment of said complete data packet in said buffer if said total size is larger than said minimum size threshold ([Col 8, lines 32-44] (e.g. This is the counter which indicates (i.e. associating with segment) the buffer's current filling level (for an AAL2 connection, a group of AAL2 connections or the entire buffer). In other words it indicates the number of octets (i.e. segments) present in the buffer for a given AAL2 connection (or for a given group of connections, or the total number of octets used (i.e. determining a total size of first (or last) data packet or segment))).

**Regarding claim 28**, Besset in view of Yuan teaches all the limitations of claim 21.

Besset further teaches the system wherein said comparison means is adapted for comparing a size of said data packet segment associated with said counter with a size of a next consecutive data packet segment in said buffer, wherein said identifying means is adapted for identifying said next data packet segment as a last data packet segment of said complete data packet in said buffer if said size of said data packet segment associated with said counter differs from said size of said next data packet segment ([Col 8, lines 55-65] (e.g. It is then determined whether the buffer is in a state of congestion. If the buffer is in a state of congestion (CONG\_VAL=OK), as determined at a previous sampling, the algorithm passes along branch b1, and the value CPS\_CO+LI+1+3 (i.e. size) is compared with the lower threshold (i.e. comparing a size of segments or packets). If CPS\_CO+LI+1+3 (i.e. size) is lower than that threshold, then it is determined that the initially declared congestion condition is no longer true and the algorithm passes along branch b2 to set the value CONG\_VAL=NOK. If CPS\_CO+LI+1+3 (i.e. size) is greater than or equal to CPS\_Low\_Threshold, it is determined that a congestion condition still exists and the algorithm passes along branch b3 to maintain CONG\_VAL=OK)).

**Regarding claim 29**, Besset in view of Yuan teaches all the limitations of claim 21.

Besset further teaches the system wherein said comparison means is adapted for comparing a size of the data packet segment currently associated with said counter with a size of a next consecutive data packet segment in said buffer, wherein said associating means is adapted for associating said counter with said next data packet segment if said size of the data packet segment currently associated with said counter is equal to said size of said next data packet segment, said comparison means is adapted for repeating said size comparison and said

Art Unit: 2617

associating means is adapted for repeating said counter associating until said size of the data packet segment currently associated with said counter differs from said size of said next data packet segment, whereby said identifying means is adapted for identifying said next data packet segment as a last data packet segment (LAST) of said complete data packet in said buffer ([Col 8, lines 55-65] (e.g. It is then determined whether the buffer is in a state of congestion. If the buffer is in a state of congestion (CONG\_VAL=OK), as determined at a previous sampling, the algorithm passes along branch b1, and the value  $CPS\_CO+LI+1+3$  (i.e. size) is compared with the lower threshold (i.e. comparing a size of segments or packets). If  $CPS\_CO+LI+1+3$  (i.e. size) is lower than that threshold, then it is determined that the initially declared congestion condition is no longer true and the algorithm passes along branch b2 to set the value CONG\_VAL=NOK. If  $CPS\_CO+LI+1+3$  (i.e. size) is greater than or equal to CPS\_Low\_Threshold, it is determined that a congestion condition still exists and the algorithm passes along branch b3 to maintain CONG\_VAL=OK))

### **Prior Art Record**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
  1. Kim, Do Yeon et al. (US 20040109465 A1), 10-Gigabit Ethernet line interface apparatus and method of controlling the same.
  2. Ha, Sang-Hyuck et al. (US 20030202500 A1), Apparatus and method for supporting automatic repeat request in a high-speed wireless packet data communication system.

### **Conclusion**

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahendra Patel whose telephone number is 571-270-7499. The examiner can normally be reached on 9:30 AM to 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, V. Paul Harper can be reached on 571-272-7605. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2617

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MAHENDRA R PATEL/  
Examiner, Art Unit 2617

/VINCENT P. HARPER/  
Supervisory Patent Examiner, Art Unit 2617